

REMARKS

The Office Action dated April 12, 2010 has been received and carefully noted. The above amendments to the claims, and the following remarks, are submitted as a full and complete response thereto.

By this Response, claim 1 has been amended and new claim 10 has been added to more particularly point and distinctly claim the subject matter of the present invention. No new matter has been added.

Applicants respectfully submit claims 1-3, 5, 6, 8, and 10 for consideration.

In view of the above amendments and the following remarks, Applicants respectfully request reconsideration and timely withdrawal of the pending rejections to the claims for the reasons discussed below.

OBJECTIONS TO THE CLAIMS:

In the Office Action, claim 1 was objected to for a minor informality. Claim 1 has been amended to correct such minor informality. Accordingly, it is respectfully requested that the objection to the claim be withdrawn.

REJECTION UNDER 35 U.S.C. § 112:

In the Office Action, claims 1-3, 5-6, and 8 were rejected under 35 U.S.C. § 112, first paragraph, for failing to comply with the written description requirement.

In addition, in the Office Action, claims 1-3, 5-6, and 8 were rejected under 35 U.S.C. § 112, second paragraph, for indefiniteness.

In response, the claims have been amended to more particularly point out and distinctly claim the invention.

Accordingly, it is respectfully requested that the § 112, first and second paragraph rejections to the claims be withdrawn.

Claim Rejection - 35 U.S.C. 102/103

In the Office Action, claims 1-3 and 5 were rejected under 35 U.S.C. 102(b) as allegedly being anticipated by U.S. Patent No. 2,904,875 to Trigg et al. (“Trigg”). It is respectfully asserted that, for at least the reasons provided herein below, Trigg fails to teach or suggest the recitations of the pending claims. Reconsideration is requested.

Independent claim 1, upon which claims 2-3, 5, 6, 8, and 10 depend, is directed to a surface treatment method for removing a passive film on a surface of a metal material. The surface treatment method includes raising the temperature of said metal material to a temperature at which the surface treatment is performed in a place in which amino resin is present, and during the raising of the temperature, removing the passive film by C, N and H which are liberated from the amino resin.

As will be discussed below, Trigg fails to disclose or suggest the elements of any of the presently pending claims.

Trigg describes adherent electrically insulating coating composition adapted to be applied to magnetic sheet material prior to winding or other fabricating operations of the magnetic material into cores or the like. See column 1, lines 39-42. A magnetic core is prepared by passing strips of magnetic material through an aqueous coating composition. See column 4, lines 8-38. The strips with the applied liquid coatings then are passed through a furnace to effect vaporization of the water and alcohol and to complete the curing of the resin to a thermoset material.

However, Trigg does not teach or suggest, “raising the temperature of said metal material to a temperature at which the surface treatment is performed in a place in which amino resin is present, and during the raising of the temperature, removing the passive film by C, N and H which are liberated from the amino resin,” as recited in amended independent claim 1. Instead, as described in Example III of Trigg, the strips with the applied liquid coatings are passed through a furnace provided with heating elements to effect vaporization of the water and alcohol and to complete the curing of the resin to a thermoset material. The wound core is then placed in an annealing furnace and heated, whereby all traces of the alcohol, water, and melamine-formaldehyde resin and decomposition products thereof are removed. There is no teaching or suggestion in Trigg providing that the temperature of the material is raised to a temperature at which the surface treatment is performed in a place in which amino resin is present, and during the raising of the temperature, removing the passive film by C, N and H which are liberated from the amino resin.

The Office Action also referred to column 5, lines 3-13, of Trigg as describing the claimed features. However, this portion of Trigg refers to another example, Example IV, in which a coating composition is prepared. See column 4, lines 45-75. A coated strip prepared is wound into magnetic cores and annealed. Trigg also describes that for extremely thin gauge magnetic sheet material, silicon-iron alloys, nickel-iron alloys, cobalt-iron alloys, and the like, the applied coating preferably is from 50% to 150% of the thickness of this sheet. After heat treatment during which the water and alcohol are driven off and the resin cured, the coating shrink considerably, and constitute only about 5% to 20% of the thickness of the applied liquid composition. However, contrary to the contentions made in the Office Action, Trigg does not teach or suggest that heat treatment is applied, “to a temperature at which the surface treatment is performed in a place in which amino resin is present, and during the raising of the temperature, removing the passive film by C, N and H which are liberated from the amino resin,” as recited in independent claim 1. Rather, Trigg specifically describes that the temperature is raised so that water and alcohol are driven off, the resin is cured, and the coating shrink considerably. Similar to other portions of Trigg, Example IV of Trigg is completely silent as to raising the temperature at which the surface treatment is performed in a place in which amino resin is present, and during the raising of the temperature, removing the passive film by C, N and H which are liberated from the amino resin as in the present application. Accordingly, Trigg fails to anticipate all the features recited in independent claim 1.

For at least the reasons discussed above, Applicants respectfully submit that Trigg fails to disclose or suggest all of the features of independent claim 1. Accordingly, Applicants respectfully request that the rejection of independent claim 1 be withdrawn.

Claims 2-3 and 5 depend from, and further limit, claim 1. Thus, each of claims 2-3, and 5 recites subject matter that is neither disclosed nor suggested in Trigg. It is, therefore, respectfully requested that the rejections of the dependent claims of independent claim 1 be withdrawn.

Reconsideration and allowance of claims 1-3 and 5 are, thus, respectfully requested.

Claims 1 and 5-9 were rejected under 35 U.S.C. 102(b) as allegedly being anticipated by German application No. DD 296 967 to Lerche ("Lerche"). It is respectfully asserted that, for at least the reasons provided herein below, Lerche fails to teach or suggest the recitations of the pending claims. Reconsideration is requested.

Lerche generally describes eliminating surface conditions that inhibit thermal-chemical treatment in gaseous gas mixtures containing ammonia. Before the nitriding in gaseous gas mixtures containing ammonia, the surfaces of the ferrous material that are to be nitrided are coated, in the degreased state, with a mixture of 0.1-0.9 parts by mass of derivatives of melamine and/or organic compounds which form derivatives of melamine in the temperature range of 100-600 degree Celsius, and 0.9-0.1 parts of mass of carbonates and/or hydrogen carbonates. See page 4, lines 21-30.

However, Lerche does not teach or suggest that a metal material and the amino resin are heated together so that the amino resin is decomposed. In addition, Lerche does not clearly teach or suggest that a nitriding treatment or a carburizing treatment is performed after the removing of the passive film, were the amino resin is decomposed. In particular, Lerche is silent as to teaching or suggesting, “raising the temperature of said metal material to a temperature at which the surface treatment is performed in a place in which amino resin is present, and during the raising of the temperature, removing the passive film by C, N and H which are liberated from the amino resin,” as recited in independent claim 1. Although the Office Action generally referred to Example 1 of Lerche, the Office Action did not refer to the description of Example 1 of Lerche to prove how Applicants’ arguments presented in the Response filed on February 22nd, were unpersuasive. The Office Action then generally concludes that because “it is unclear if the passive film is removed before heating or the passive film is removed after the metal material has been heated,” Lerche describes the features of independent claim 1. In view of the amendments made to independent claim 1, Applicants respectfully submit that, a person of ordinary skill in the art would find it clear that the passive film is removed after the metal material has been heated. Therefore, Lerche fails to teach or suggest the claimed features of independent claim 1.

Applicants also submit that, as explained in Example 1 of Lerche, the test piece is coated by immersing the piece in an aqueous solution containing melamine and sodium carbonate and potassium carbonate at a predetermined temperature of 95 degrees Celsius

(203 degrees Fahrenheit) and at an immersion period. After the immersion, the test piece is dipped in ethanol to speed up the drying process. Both test pieces are then gas-oxynitrided together for 18 hours at a temperature of 570 degrees Celsius at a composition of the nitriding gas atmosphere corresponding to the nitriding characteristic 3. Nothing in Example 1, or any other portion of Lerche, provides a description or suggestion describing raising temperature of said metal material, which has not been subjected to a passive film removing treatment, to a temperature at which the surface treatment is performed in a place in which amino resin is present. Also, Lerche is silent as to teaching or suggesting that during the raising of the temperature, removing the passive film by C, N and H which are liberated from the amino resin. Please let us know if the proposed arguments are acceptable.

For at least the reasons discussed above, Applicants respectfully submit that Lerche fails to disclose or suggest all of the features of independent claim 1. Accordingly, Applicants respectfully request that the rejection of independent claim 1 be withdrawn.

Claims 5, 6, and 8 depend from, and further limit, claim 1. Thus, each of claims 5, 6, and 8 recites subject matter that is neither disclosed nor suggested in Lerche. It is, therefore, respectfully requested that the rejections of claims 5, 6, and 8 be withdrawn.

Reconsideration and allowance of claims 1, 5, 6, and 8 are, thus, respectfully requested.

In the Office Action, claims 1-3 and 5 were rejected under 35 U.S.C. 102(b) as allegedly being anticipated by, or in the alternative, under 35 U.S.C. 103(a) as allegedly being obvious over U.S. Patent No. 4,504,324 of Furuno ("Furuno"). It is respectfully asserted that, for at least the reasons provided herein below, Furuno fails to teach or suggest the recitations of the pending claims. Reconsideration is requested.

Furuno describes removing a spontaneously-formed oxide film on a treated aluminum plate by dipping the plate in a 7% aqueous sodium hydroxide solution at 55° C. for 3 minutes. After several more steps, the plate is then electrodeposited by using an electrodeposition bath of water soluble acryl melamine resin and passing a direct current at 30° C. for 2.5 minutes. The electrodeposition is a coating to cover the plate. Thereafter, the plate is baked at 190° C. for 30 minutes to obtain the coated plate (See Furuno at column 6, lines 65-68, and column 7, line 60, to column 8, line 11).

On page 11 of the Office Action, the Office Action generally concluded that because "it is unclear if the passive film is removed before heating or the passive film is removed after the metal material has been heated," Furuno describes the features of independent claim 1. In view of the amendments made to independent claim 1, a person of ordinary skill in the art would appreciate that it is clear that the passive film is removed after the metal material has been heated. Therefore, Furuno fails to teach or suggest the claimed features of independent claim 1.

Applicants respectfully submit that Furuno fails to teach or suggest, "raising the temperature of said metal material to a temperature at which the surface treatment is

performed in a place in which amino resin is present, and during the raising of the temperature, removing the passive film by C, N and H which are liberated from the amino resin,” as recited in independent claim 1. Instead, Furuno describes that the plate is dipped in a diluted aqueous solution of commercial reagent grade nitric acid for 3 minutes, washed well with tap water, rinsed with deionized water and electrodeposited by using an electrodeposition bath of water soluble arcy l melamine resin. First, Furuno clearly sets forth that the plate is dipped in a commercial reagent grade nitric acid. There is no teaching or suggestion in Furuno of removing the passive film by C, N and H which are liberated from the amino resin. Furthermore, Furuno clearly indicates that after the plate is dipped in the nitric acid, the plate is then electrodeposited in a bath of soluble arcy l melamine resin, which clearly teaches away from the amended features of independent claim 1. Accordingly, Furuno fails to anticipate all the claimed features of amended independent claim 1.

For at least the reasons discussed above, Applicants respectfully submit that Furuno fails to disclose or suggest all of the features of independent claim 1. Accordingly, Applicants respectfully request that the rejection of independent claim 1 be withdrawn.

Claims 2, 3, and 5 depend from, and further limit, claim 1. Thus, each of claims 2, 3, and 5 recites subject matter that is neither disclosed nor suggested in Furuno. It is, therefore, respectfully requested that the rejections of claims 2, 3, and 5 be withdrawn.

Reconsideration and allowance of claims 1, 2, 3, and 5 are, thus, respectfully requested.

Claim Rejection - 35 U.S.C. 103

Claim 8 was rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Furuno in view of “Characterization of aluminum surfaces with and without plasma nitriding by X-ray photoelectron spectroscopy” of Gredelj et al. (“Gredelj”). The Office Action acknowledged that Furuno fails to disclose or suggest all of the features of claim 8, and cited Gredelj to remedy the deficiencies of Furuno with respect to these claims. Applicants respectfully submit that each of claim 8 recites subject matter that is neither disclosed nor suggested in the combination of Furuno and Gredelj.

Furuno is outlined above. Gredelj describes that plasma hardening is used in surface hardening of steels. Plasma hardening can also be used for surface hardening of aluminum if a native aluminum oxide layer present on its surface can be removed by a pretreatment (See Gredelj at page 240, column 2).

Each of claims 8-9 recites subject matter that is neither disclosed nor suggested in the combination of Furuno and Gredelj. Claims 8-9 depend from, and further limit, amended independent claim 1. As discussed above, Furuno fails to disclose or suggest, “raising the temperature of said metal material to a temperature at which the surface treatment is performed in a place in which amino resin is present, and during the raising of the temperature, removing the passive film by C, N and H which are liberated from the

amino resin,” as recited in independent claim 1. Although Gredelj describes different plasma nitriding treatments, similar to Furuno, Gredelj does not teach or suggest performing a nitriding treatment after the removing of a passive film. Gredelj sole purpose is to describe a process of surface hardening of Al if the native aluminum oxide layer can be removed by a pretreatment. A combination of Furuno and Gredelj would fail to teach or suggest all the features recited in amended independent claim 1.

Accordingly, Applicants respectfully submit that the combination of Furuno and Gredelj does not disclose or suggest all of the features of claim 8, and respectfully request that this rejection be withdrawn.

Reconsideration and allowance of claim 8 is, thus, respectfully requested.

Conclusion

For the reasons set forth above, it is respectfully submitted that each of claims 1-3, 5, 6, 8, and 10 recites subject matter that is neither disclosed nor suggested in the cited references. It is, thus, respectfully requested that all of claims 1-3, 5, 6, 8, and 10 be allowed, and that this application be passed to issuance.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, Applicants’ undersigned representative at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, Applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,

/Alicia M. Choi/

Alicia M. Choi
Attorney for Applicants
Registration No. 46,621

Customer No. 32294

SQUIRE, SANDERS & DEMPSEY L.L.P.

14th Floor

8000 Towers Crescent Drive

Vienna, Virginia 22182-6212

Telephone: 703-720-7800

Fax: 703-720-7802

AMC:dk